

OnSite[™] Model 3300 **EFM Router**

Quick Start Guide



Important — This is a Class A device and is not intended nor approved for use in an industrial or residential environment.



WARNING

- Do not open the device when the power cord is connected. For systems without a power switch and without an external power adapter, line voltages are present within the device when the power cord is connected.
- For devices with an external power adapter, the power adapter shall be a listed Limited Power Source. The mains outlet that is utilized to power the device shall be within 10 feet (3 meters) of the device, shall be easily accessible, and protected by a circuit breaker in compliance with local regulatory requirements.
- For AC powered devices, ensure that the power cable used meets all applicable standards for the country in which it is to be installed.
- For AC powered devices which have 3 conductor power plugs (L1, L2 & GND or Hot, Neutral & Safety/Protective Ground), the wall outlet (or socket) must have an earth ground.
- For DC powered devices, ensure that the interconnecting cables are rated for proper voltage, current, anticipated temperature, flammability, and mechanical serviceability.
- WAN, LAN & PSTN ports (connections) may have hazardous voltages present regardless of whether the device is powered ON or OFF. PSTN relates to interfaces such as telephone lines, FXS, FXO, DSL, xDSL, T1, E1, ISDN, Voice, etc. These are known as hazardous network voltages and to avoid electric shock use caution when working near these ports. When disconnecting cables for these ports, detach the far end connection first.
- Do not work on the device or connect or disconnect cables during periods of lightning activity.



WARNING

This device contains no user serviceable parts. This device can only be repaired by qualified service personnel.



WARNING

This device is NOT intended nor approved for connection to the PSTN. It is intended only for connection to customer premise equipment.

1.0 Hardware Installation

1.1 Contents of Package

- OS3300 EFM Router
- External power supply for OnSite Model 3300
- Ethernet cable with RJ45 plugs on each end (included)

1.2 What you will need

- Default unit IP address: 192.168.200.10
- Default username: admin
- Default password: (no password)
- PC Computer

1.3 Identify the connector and attach the cables

All connectors are on the rear panel of the OS3300 Router.

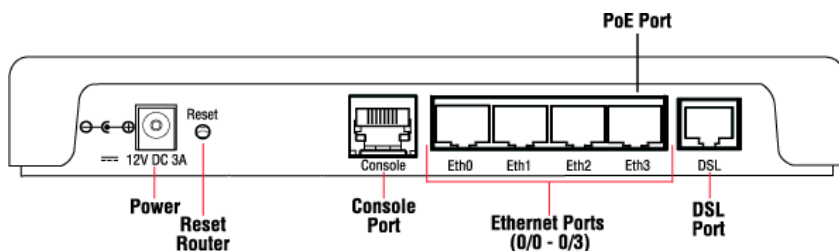


Figure 1. All connectors are on the rear panel of the OS3300 EFM Router

Connect the DSL Interface

To function properly, the OS3300 must be connected using a twisted-pair, unconditioned, dry, metal wire, between 19 (0.9mm) and 26 AWG (0.4mm). Leased circuits that run through signal equalization equipment are not acceptable.

The EFM Router is equipped with a RJ-45 interface jack (*DSL*), which conforms to the T568B standard. Any standard Category 5e cable can be used to directly connect two routers. Depending on the router model, it will have a two-wire, four-wire or eight-wire interface. Observe the signal/pin relationship on the OS3300's *DSL* interface jack for each pair in Figure 2. Figure 4 shows the proper way to wire a cable with a RJ-45 jack on one end and four RJ-11 jacks on the other.

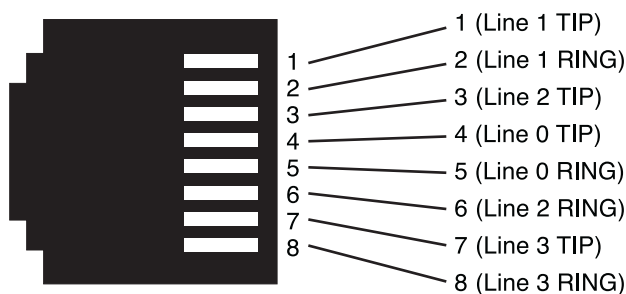


Figure 2. OS3300 (RJ-45) twisted pair DSL interface

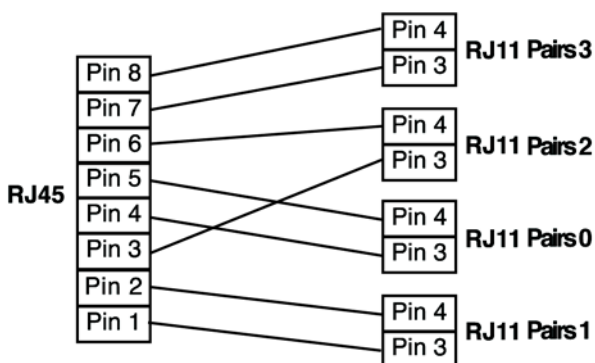


Figure 3. OnSite Pinout for two devices

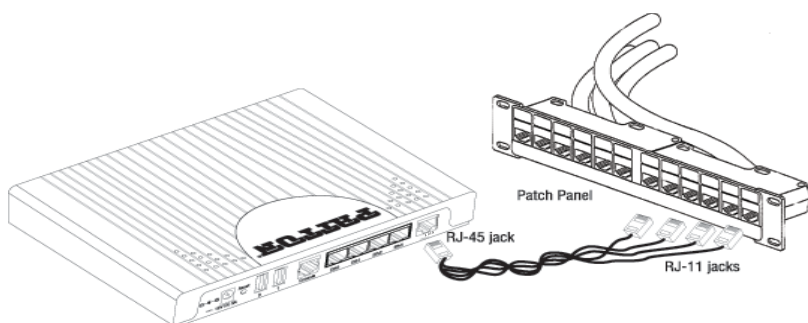


Figure 4. RJ-45 to RJ-11 cable

2.0 Connecting Interfaces

2.1 Connecting Console Interface

Install the supplied RJ-45-to-RJ-45 cable with the DB9-RJ45 adapter between the OS3300 RS-232 port and an open serial port on your computer. If you need to assemble your own cable, refer to the pinout diagram in figure 5.

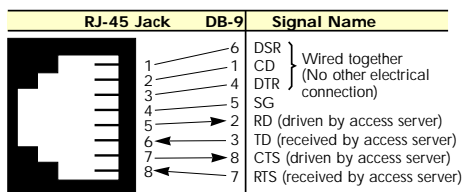


Figure 5. DB-9-to-RJ-45 cable diagram

2.2 Connect the Ethernet Interface

The EFM Router has four unshielded RJ-45 auto-MDIX10/100Base-T interfaces. These are designed to connect directly to a 10/100Base-TX network. Figure 6 shows the signal/pin relationships on this interface. You may connect this port to a hub or PC using a straight through or crossover cable that is up to 328 ft long.

2.3 Connect the PoE Interface (optional)

The RJ-45 port is an Auto-MDIX 10/100Base-T interface. This port is designed to connect directly to a 10/100Base-T network. Figure 6 shows the signal/pin relationships on this interface. You may connect this port to any Ethernet enabled device using a straight-through or crossover cable that is up to 328 ft long. PoE enabled devices such as IP cameras, Voice over IP (VoIP) phones and wireless access points may draw the PoE. The router injects power on the data pair pins 1/2 (PoE+) and 3/6 (PoE-) of the connector labeled "Eth 3." The power injection conforms to the 802.3af specification, and will deliver the 55 volts with a maximum of 13 watts. A 12 volt 3 amp external power supply is required for PoE.

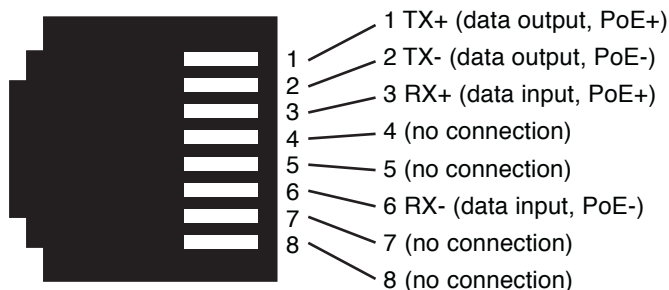


Figure 6. OS330010/100Base-T RJ-45 Connector Pinout

Note PoE referenced in Figure 6 applies to Ethernet 0/3 only.

2.4 Connect the Power Source

The EFM Router does not have a power switch; it powers on once the device is plugged in.

The power connection is made via the barrel jack on the rear panel of the OS3300. No configuration is necessary for the power supply.

2.5 Router/Bridge Status LEDs

The LEDs indicate the status of power, the WAN (OnSite) PoE, and Ethernet connections.

Note When powered down, the LED indicators are clear; when powered on, the LED indicators are yellow.

Table 1. OS3300 front panel LEDs

LED Name	LED Function	Description
Power	ON	Indicates power is applied.
R	OFF	WAN is configured as CO.
	ON	WAN is configured as CPE.
OnSite Pair (one LED for each port [1 on OS3301, 2 on OS3302, 4 on OS3304])	OFF	Port is configured as DOWN.
	ON	Port is in data mode.
	SLOW BLINK FAST BLINK	Port is in handshake mode (looking for a CPE signal). Port is in training mode (active communication with CPE).
PoE	OFF	PoE is turned off.
	ON	PoE is turned on.
Ethernet (0/0 - 0/3)	ON	Port is linked.
	OFF	Data is passing over the port.

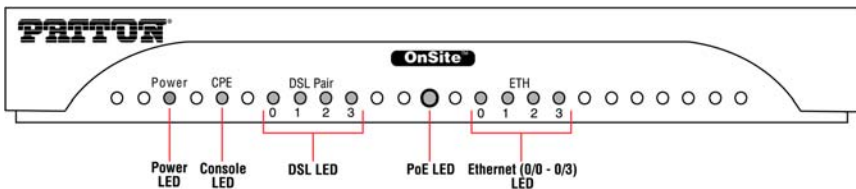


Figure 7. OS3300 front panel

3.0 CLI Operation and Configuration

You can connect a PC to configure the OnSite 3300 using the CLI. The 3300 EFM Router comes equipped with an password protected (easy to use) Command Line Interface. You can connect directly to the unit and make changes immediately by using the Console Connection or a SSH connection to the default IP address: 192.168.200.10/24. SSH is enabled by default, Telnet is disabled by default for security reasons. In this section you can see how easy it is to change IP address, username and save your configuration. On page 9 you can see a sample configuration for easy connections to Central EFM DSLAM or EFM Peer Router.

3.1 Connect with SSH

1. Connect the Ethernet cable.
2. Connect the power supply.
3. Connect via SSH to the extender through CPE or CO IP addresses
 - Default CPE IP address: 192.168.200.10
4. Login with the default username *admin* and no password.

3.2 Connect with Console

1. Connect the RS232 Console cable. (8-N-1 19200)
2. Connect the power supply.
3. Login with the default username *admin* and no password.

3.3 Change the IP address (default: 192.168.200.10)

Follow the command sequence below:

```
node~>enable
node~#configure
node~(cfg)#context ip router
node~(ctx-ip)[router]#interface LAN
node~(if-ip)[router.LAN]#no ipaddress 192.168.200.10/24
node~(if-ip)[router.LAN]#ipaddress <new address>/<new mask>
```

3.4 Change the default username

The default username will be removed once a new one is created.

Follow the command sequence below:

```
node~>enable
node~#configure
node~(cfg)#superuser <username> password <password>
```

3.5 Save the Configuration

Follow the command sequence below:

```
node~>enable
node~#configure
node~(cfg)#copy running-config startup-config
```

3.6 OnSite DSL Commands

CO and CPE: This will set the EFM Router as CO or CPE. CO is typically used at the network, CPE is typically used at the CPE device or CPE network.

```
node(prt-DSL)# mode {CO|CPE}
```

Annex Type: Please consult support before changing this setting.

```
node~(prt-DSL)[<name>]# annex-type { b-g | a-f }
```

DSL Rate Configuration: This will increase the DSL rate of the OS3300. Your OnSite 3300 is defaulted to automatically select the optimal rate based on the distance (adaptive).

```
node(prt-DSL)[0/0]# payload-rate {adaptive [max <192..15296>] |
<192..15296>}
```

Modulation Scheme: Note higher TC-PAM rates will increase maximum payload rates available but will decrease distance. Your OnSite 3300 is defaulted to automatically select the optimal setting. Please consult manual for the rate reach chart to determine your optimal setting if you choose to hard set this value. Higher TC-PAM rates are ideal for shorter cable runs offering max symmetrical (upstream/downstream) speeds of 11.4 Mbps (TCPAM64) and 15.3 Mbps (TCPAM128) per pair.

```
node(prt-DSL)[0/0]# tcpam {auto(16/32) | auto(64/128) | 16 | 32 |
64 | 128}
```

OnSite Ports: The configurations below are used to configure various aspects of the OnSite port(s):

```
node~(prt-DSL)# port.dsl 0 0
```

Signal to Noise Ratio: Configures the acceptable noise margin for adaptive rate. SNR is the relative strength of the DSL signal to Noise ratio. 6dB is generally the lowest dB recommended in order for the modem to synch. As overall bandwidth increases, your signal to noise ratio decreases; the higher the number the better. Your OS3300 is defaulted at 6 giving you the highest likelihood to connect.

```
node(prt-DSL)[0/0]# snr-margin <-10..22>
```

Below 6dB	bad
6dB-10dB	fair
11dB-20dB	good

Description: This is the description of the port/DSL (OnSite connection). (Ex: "This DSL goes to building 4") When entering a description with spaces in the text, the description must be in quotations.

```
node~(prt-DSL)[0/0]# description <description>
```

Use Profile: Configures the acceptable noise margin for adaptive rate. SNR is the relative strength of the DSL signal to Noise ratio. 6dB is generally the lowest dB recommended in order for the modem to synch.

```
node~(prt-dsl)[0/0]# use profile <name>
```

Service Mode: Configures the number of pairs (wires) you want to use. The OS3300 will default to the maximum number of wires available on your version of the OnSite. OS3301 (2-wire); OS3302 (4-wire); OS3304 (8-wire).

```
node~(prt-DSL)[0/0]# service-mode { 2-wire | 4-wire | 6-wire | 8-  
wire }
```

Shutdown: Disables or Enables OnSite port(s).

```
node~(prt-DSL)[0/0]# [no] shutdown
```

Exit: Return to parent mode.

```
node~(prt-DSL)[0/0]# exit
```

Show: Displays all the configured options of the OS3300 OnSite port(s).

```
node(cfg)# show prt-DSL 0 0
```

3.7 Sample configuration

Below please find a sample configuration for a typical CPE EFM Router setup. This particular unit is configured as a DHCP Client on the WAN (EFM) side and DHCP Server configured on the LAN side. It is a simple routed connection configured to route all default traffic out the DSL WAN port.

```
#-----#
# Sample Configuration #
# Patton Electronics Company #
# OS3304 #
# Release: 3.4.2 2014/03/26 #
# Generated configuration file #
# #
#-----#
```

```
cli version 4.00
no clock CO default-offset
switch mode groups
```

```
profile aaa DEFAULT
method 1 CO continue-on-reject
```

```
console
use profile aaa DEFAULT
```

```
telnet-server
use profile aaa DEFAULT
shutdown
```

```
ssh-server
use profile aaa DEFAULT
no shutdown
```

```
snmp-server
shutdown
```

```
web-server http
use profile aaa DEFAULT
no shutdown
```

```
ntp shutdown
```

```
profile napt CO
```

```
profile dhcp-server LAN-POOL
network 192.168.200.0/24
lease 24 hours
default-router 192.168.200.10
domain-name-server 8.8.8.8
domain-name-server 8.8.8.4
include 192.168.200.50 192.168.200.100
```

```
profile tls DEFAULT
no authentication incoming
no authentication outgoing
private-key pki:private-key/DEFAULT
own-certificate 1 pki:own-certificate/DEFAULT
```

Profile

```

context ip ROUTER

interface LAN
  ipaddress LAN 192.168.200.10/24
  ipaddress DHCP

interface DSL
  ipaddress DHCP
  use profile napt CO DHCP

routing-table DEFAULT

context ip ROUTER
  use profile dhcp-server LAN-POOL

```

Context IP

An abstract section of the OS300 EFM Router configuration that is dedicated to the IP and Routing Layer of Patton Device

```

profile ppp DEFAULT
context bridge

```

Context Bridge

An abstract section of the OS3300 EFM Router configuration that is dedicated to the bridging protocol at the CPU layer of the Patton Device.

```

bridge-group LAN
  no shutdown
  bind interface ROUTERLAN

```

Bridge Group

```

context switch-group DEFAULT
  bind bridge-group LAN
  no shutdown

```

Context Switch Group

An abstract section of the OS3300 EFM Router configuration that is dedicated to the MAC protocol of the Hardware and Switching layer of the Patton Device.

```

interface ETHERNET_0_0

```

```

interface ETHERNET_0_1

```

```

interface ETHERNET_0_2

```

```

interface ETHERNET_0_3

```

```

port ethernet 0 0
  bind switch-group DEFAULT ETHERNET_0_0
  no shutdown

port ethernet 0 1
  bind switch-group DEFAULT ETHERNET_0_1
  no shutdown

port ethernet 0 2
  bind switch-group DEFAULT ETHERNET_0_2
  no shutdown

port ethernet 0 3
  bind switch-group DEFAULT ETHERNET_0_3
  no shutdown

port dsl 0 0
  mode cpe
  bind interface ROUTER DSL
  service-mode 8-wire
  no shutdown

```

Port

Any physical port of the Patton Device

Context IP

- DSL IP is set for DHCP CLIENT
- Profile NAPT for EFM Router CO Traffic
- Bridge Group IP set for LAN Network Management

Context Bridge Group

- Collect all Ethernet ports into Switch Address

Context Switch Group

- Bind all Ethernet ports directly into 4 Port Switch

3.8 Conceptual View

Below you will see a conceptual view of basic OS3300 configuration concepts. _You can see contexts, interfaces, ports, bindings, profiles and use commands._ A context represents one specific networking technology or protocol. These are bound together to offer a highly flexible multi functioning multi-service network device.

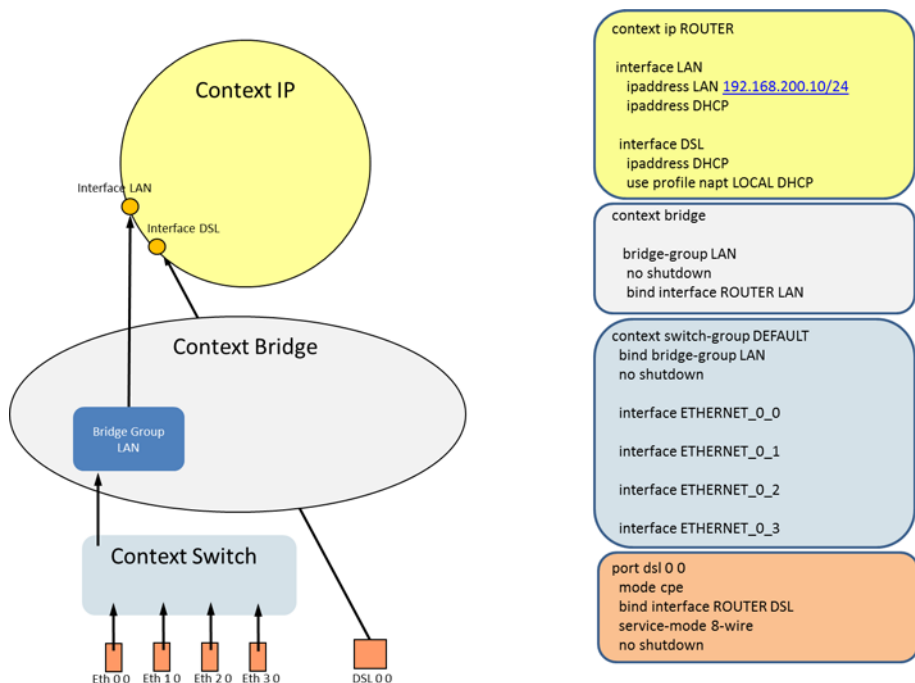


Figure 8. Sample Configuration Diagram

3.9 Shipping Configuration

The following OS3300 EFM Router configuration is the default factory or shipping configuration.

```
#-----#
#
# Shipping Configuration #
#
#-----#
```

```
cli version 4.00
no clock CO default-offset
snmp shutdown
```

```
telnet-server
shutdown
```

```
ssh-server
no shutdown
```

```
web-server http
no shutdown
ntp
shutdown
```

```
context ip ROUTER
```

```
interface LAN
ipaddress 192.168.200.10/24
ipaddress DHCP
```

```
context bridge
```

```
bridge-group LAN
bind interface ROUTER LAN
no shutdown
```

```
context switch-group DEFAULT
bind bridge-group LAN
no shutdown
```

```
interface ETHERNET_0_0
```

```
interface ETHERNET_0_1
```

```
interface ETHERNET_0_2
```

```
interface ETHERNET_0_3
```

Context IP

An abstract section of the OS300 EFM Router configuration that is dedicated to the IP and Routing Layer of Patton Device.

Context Bridge

An abstract section of the OS3300 EFM Router configuration that is dedicated to the bridging protocol at the CPU layer of the Patton Device.

Bridge Group

Context Switch

An abstract section of the OS3300 EFM Router configuration that is dedicated to the MAC protocol of the Hardware and Switching layer of the Patton Device.

```
port ethernet 0 0
bind switch-group DEFAULT ETHERNET_0_0
no shutdown
```

```
port ethernet 0 1
bind switch-group DEFAULT ETHERNET_0_1
no shutdown
```

```
port ethernet 0 2
bind switch-group DEFAULT ETHERNET_0_2
no shutdown
```

```
port ethernet 0 3
bind switch-group DEFAULT ETHERNET_0_3
no shutdown
```

```
port dsl 0 0
service-mode 8-wire
mode cpe
bind bridge-group LAN
no shutdown
mtu 1522
```

Port

Any physical port of the Patton Device

4.0 Web Interface

The OS3300 provides a browser interface that allows you to configure and manage the EFM Router. After you set up the IP address for the OS3300, you can access the Web interface applications directly in your Web browser by entering the configured IP address. You can then use your Web browser to list and manage configuration parameters from a PC.

Note Earlier versions predating Internet Explorer 9.0 browser are not compatible with the OS3300.

4.1 Connect with Web GUI

1. Connect the Ethernet cable.
2. Connect the power supply.
3. Connect via web browser to the default address 192.168.200.10 0
4. Login with the default username *admin* without a password.
5. Use current updated version of your favorite browser.

Once the network connection is established, you will be able to reach the OS3300 Web GUI. Login to the Web GUI using the following credentials below:

- username: *admin*
- password: [blank]

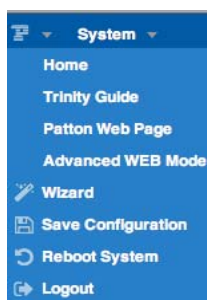


Figure 9. Login

The OS330 Web GUI also includes advanced web mode menu options depicted in figure 10.



Figure 10. Advanced Web mode

5.0 Additional Information

For detailed information about configuring and operating guidance, set up procedures, and troubleshooting, refer to the *Trinity 3.0 Reference Guide* available on DSL at www.patton.com/manuals

A Customer and Technical Support

Toll-Free VoIP support: call [sip:support@patton.com](tel:sip:support@patton.com) with a VoIP SIP phone

On DSL support: www.patton.com

E-mail support: support@patton.com— answered within 1 business day

B Compliance

B.1 EMC

- FCC Part 15, Class A
- EN55022, Class A
- EN55024
- EN50581

B.2 Safety

- UL 60950-1/CSA C22.2 NO. 60950-1
- IEC/EN60950-1 2nd Edition

B.3 PSTN Regulatory

- This device is not intended nor approved for connection to the PSTN

C Radio and TV Interference (FCC Part 15)

This device generates and uses radio frequency energy, and if not installed and used properly—that is, in strict accordance with the manufacturer's instructions—may cause interference to radio and television reception. The device has been tested and found to comply with the limits for a Class A computing device in accordance with specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection from such interference in a commercial installation. However, there is no guarantee that interference will not occur in a particular installation. If the device does cause interference to radio or television reception, which can be determined by disconnecting the unit, the user is encouraged to try to correct the interference by one or more of the following measures: moving the computing equipment away from the receiver, re-orienting the receiving antenna and/or plugging the receiving equipment into a different AC outlet (such that the computing equipment and receiver are on different branches).

D EC Declaration of Conformity

Patton Electronics, Inc declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2004/108/EC relating to electromagnetic compatibility, Directive 2006/95/EC relating to electrical equipment designed for use within certain voltage limits and Directive 2011/65/EU relating to RoHS compliance. The Declaration of Conformity may be obtained from Patton Electronics, Inc at www.patton.com/certifications.

The safety advice in the documentation accompanying this device shall be obeyed. The conformity to the above directive is indicated by CE mark on the device.

E Authorized European Representative

D R M Green

European Compliance Services Limited.

Greyfriars Court

Paradise Square

Oxford, OX1 1BE, UK

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E.3 Warranty, Trademark, & Compliance Information

For warranty, trademark and compliance information, refer to the *OnSite User Manual* located on DSL at www.patton.com/manuals.



In accordance with the requirements of council directive 2002/96/EC on Waste of Electrical and Electronic Equipment (WEEE), ensure that at end-of-life you separate this product from other waste and scrap and deliver to the WEEE collection system in your country for recycling.